

United States Government

Department of Energy

memorandum

DATE: SEP 25 1992

REPLY TO

ATTN OF: EM-421 (W. A. Williams, 903-8149)

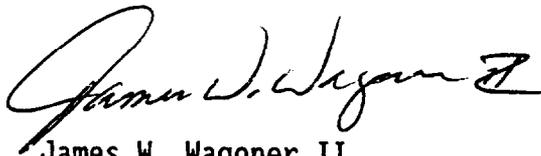
SUBJECT: Authorization for Remedial Action at Diamond Magnesium Site in Painesville, Ohio

TO: L. Price, OR

The former Diamond Magnesium Company site located at 720 Fairport-Nursery Road in Painesville, Ohio, is designated for remedial action under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The site is owned by Uniroyal Chemical Company and by Lonza Chemical, Incorporated. This designation is based on the results of a radiological survey and conclusions from an authority review as noted in the attached Designation Summary. Copies of the radiological survey reports and the authority review are provided for information.

The site has been assigned a low priority under FUSRAP protocol. The survey concluded that the property contains residual radioactive material in concentrations that exceed current guidelines in both surface and subsurface soils. However, because they are outside in areas where there is little work activity, under present conditions and use, no significant radiation exposures would occur to individuals who access the area. Because there is extensive radiological contamination outdoors, we recommend that cleanup of the site follow the normal FUSRAP protocol for remedial action.

The effect of this designation on the FUSRAP baseline should be evaluated, documented and submitted for approval under the baseline change control procedures.



James W. Wagoner II
Director
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Attachments

Designation Summary
Diamond Magnesium, Painesville

bcc:
Weston

Distribution:

- EM-40 (2)
- EM-42 (3)
- EM-FOR
- EM-GTN
- Pat Suspense
- Williams Reader

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EM-421:wagoner:djn:903-8145:9/18/92:diamond.dsg

P. Hevner Review: pk 10/1
M. White Review: mw 10/1

Williams
EM-421
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Wagoner
EM-421
9/25/92

Fulmer
EM-42
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Fiore
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Balblitz
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Whitfield
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10/7/92

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**FORMERLY UTILIZED SITES
REMEDIAL ACTION PROGRAM**

**DESIGNATION SUMMARY
FOR DIAMOND MAGNESIUM COMPANY
PAINESVILLE, OHIO**

August 5, 1992

U.S. Department of Energy
Office of Environmental Restoration

**Designation Summary
Diamond Magnesium, Painesville**

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Designation Summary
Diamond Magnesium, Painesville

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INTRODUCTION

The Department of Energy (DOE), Office of Environmental Restoration, has reviewed the past activities of the Manhattan Engineer District (MED) at the former Diamond Magnesium Company site in Painesville, Ohio, and has completed a radiological survey of the site (Foley, et al 1991). DOE has determined that the residual radioactive materials in surface and subsurface soils exceed current guidelines (USD OE 1987, 1990) for use without radiological restrictions.

Based on a review of the available historical documentation and the results of the survey, the DOE has concluded that this site shall be designated for remedial action under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The site has been assigned a low priority as the survey results indicate that the residual radioactivity is outside and poses no immediate risk to workers. The remainder of this report summarizes the site information and the designation decision.

BACKGROUND

Site Function:

The following discussion is based upon the Authority Review (Williams 1992).

In the early 1940s, the Defense Plant Corporation constructed a magnesium production facility in Painesville, Ohio, on property owned by the Diamond Magnesium Company. Diamond Magnesium intermittently operated this facility from the early 1940s to the early 1960s for the GSA in support of government operations. In July and August 1952, Diamond Magnesium received approximately 750 tons of radioactively-contaminated scrap steel from the Lake Ontario Storage Area (LOSA). Approximately 700 tons of additional scrap steel were shipped from LOSA to the Painesville facility in March and April 1953. The scrap ferrous metal was for use in controlling chlorine during the magnesium production process.

Site Description:

The following discussion is based upon the survey report (Foley and Floyd, 1990).

The Diamond Magnesium site is located at 720 Fairport-Nursery Road in Painesville, Ohio, approximately 22 miles northeast of Cleveland.

At the time of the magnesium production work, about a third of the site's approximate 150 acres was covered by large buildings and rail lines. At the time of the survey, some of the same buildings were in use but others removed and/or replaced with other buildings, storage tanks, over-head pipe-rack systems, and spill-retention areas.

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Designation Summary
Diamond Magnesium, Painesville

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Owner History:

The following is based upon the survey report (Foley and Carrier, 1991).

For periods during the early 1940s and 1950s, the Diamond Magnesium Company operated a magnesium reduction facility for the General Services Administration (GSA). In the early 1960s, the Diamond Magnesium facility was excecised and sold by GSA in separate parcels to the Uniroyal Chemical Company and the Lonza Chemical Company as commercial property. As of 1992, both the Uniroyal and Lonza companies were in operation.

Radiological History and Status:

The following summary is based upon the authority review (Williams 1992).

There is no known history of processing or production for radioactive materials. However, for the production process for magnesium, it was desirable to use scrap ferrous metal to scrub chlorine gas released during the process. The GSA sought such scrap from the Atomic Energy Commission (AEC) scrap metal inventories at the Lake Ontario Storage Area (LOSA). The scrap metals most likely included discarded metal drums that had been used to ship and store residues from the processing of pitchblende ores, which contained radium and thorium.

GSA requested the transfer from the AEC of scrap with full knowledge of slight radioactive contamination. AEC personnel monitored the release and shipment by rail of radioactively-contaminated scrap metal from LOSA. Painesville received from the AEC at least two shipments, together exceeding 1,400 tons.

Authority Review:

In 1992, the DOE determined that it had the authority to conduct remedial action at the site (Williams 1992). This determination of authority under FUSRAP was based upon the following significant factors.

- o The AEC specifically approved the release of the contaminated scrap metal to the GSA facility in Painesville, Ohio.
- o Available AEC records indicate that the scrap metal was "slightly" contaminated with uranium at levels not considered hazardous.
- o Contaminants presently at the site are a mixture of uranium ore and two different waste products from the processing of uranium ore.
- o Chemical "fingerprints" of the contaminants match those of materials unique to AEC operations.
- o Radiation levels from AEC related materials are well above applicable guidelines.

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- o The AEC had a clear responsibility to control the release of radioactively contaminated materials.
- o The GSA and Diamond Magnesium may have relied on the AEC's radiological expertise for the intended use of the scrap metal.

DESIGNATION DETERMINATION

The survey results (Foley and Carrier 1991) indicated widespread elevated concentrations of radionuclides in both surface and subsurface soil in excess of guidelines on both properties (DOE Order 5400.5, April 1990). The major contaminants were radium-226 and thorium-230. The relatively high concentration of lead found in a soil sample, taken from the east side of the former GSA property in the vicinity of the railroad spur, coupled with elevated concentrations of radium-226, is typical of pitchblende residues stored at LOSA.

The DOE has authority to conduct remedial action at the site under FUSRAP. This authority is based on the AEC's role in the release of radioactively-contaminated scrap to the government's Diamond Magnesium site in Painesville. Because current use of the site will not result in doses in excess of guidelines and because potential health risk and spread of contamination are small, the site is designated a low priority site.

REFERENCES

Foley, R.D. and L.M. Floyd, 1990: Preliminary Site Survey Report for the Uniroyal Chemical Company, 720 Fairport-Nursery Road, Painesville, Ohio (DMP001). ORNL/TM-11119. Oak Ridge National Laboratory, Oak Ridge, Tennessee. March.

Foley, R.D. and R.F. Carrier, 1991: Radiological Characterization Survey of the Former Diamond Magnesium Company Site, 720 Fairport-Nursery Road, Painesville, Ohio (DMP001, DMP002). ORNL/TM-11817. Oak Ridge National Laboratory, Oak Ridge, Tennessee. December.

United States Department of Energy (USDOE), 1986: Formerly Utilized Sites Remedial Action Program, Summary Protocol, Identification - Characterization - Designation - Remedial Action - Certification. Office of Nuclear Energy, January.

USDOE, 1987: U.S. Department of Energy Guidelines for Residual Radioactive Material at Formerly Utilized Sites Remedial Action Program and Remote Surplus Facilities Management Program Sites. Revision 2, Office of Nuclear Energy, March.

USDOE, 1990: Radiation Protection of the Public and the Environment. DOE Order 5400.5. Office of Environment, Safety, and Health, February 8.

Williams, W.A., 1992: Authority Review for the Diamond Magnesium Company site in Painesville, Ohio. USDOE, July 17.

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ORNL/TM-11817

**OAK RIDGE
NATIONAL
LABORATORY**

MARTIN MARIETTA

**Radiological Characterization Survey of the
Former Diamond Magnesium Company
Site, 720 Fairport-Nursery Road,
Painesville, Ohio
(DMP001, DMP002)**

R. D. Foley
R. F. Carrier

**MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
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**PRELIMINARY SITE
SURVEY REPORT FOR THE
UNIROYAL CHEMICAL COMPANY,
FORMERLY THE
DIAMOND MAGNESIUM COMPANY
720 FAIRPORT-NURSERY ROAD,
PAINESVILLE, OHIO
(DMP001)**

R. D. Foley
L. M. Floyd

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